NORTH AMERICAN COLEOPTERA FAUNA: NOTES ON PYROPHORINAE, ELATERIADAE[1]

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The elaterid subfamily Pyrophorinae needs to be studied in considerable detail for it is certain that there are several unrecognized genera and probably many new species. The following notes have been brought together to aid collectors, and others interested in elaterids, to recognize the group, and to make some classification changes. However, the tribe Conoderini contains a few more genera than indicated here. This will be shown after a revision has been completed.

Pyrophorines may be separated from the other subfamilies by the presence of one or more setae on the claw near the base (these not to be confused with other setae which may be present between the claws at the apex of the tarsal segment). There is little else to define the group at the present time. It is probably one of the most variable of the subfamilies, and in North America, one of the most colorful. The following key will serve to separate all of the genera occuring in North America (including Central America and the West Indies).[5]

KEY TO THE NORTH AMERICAN GENERA OF PYROPHORINAE

1.	Antennae received in deep prothoracic sternopleural grooves (Adelocerini)	2
	Antennae not received in prothoracic sternopleural grooves	10
2(1).	Antennal grooves nearly as long as prosternopleural sutures	3
	Antennal grooves not over half as long as prosternopleural sutures	9
3(2).	Tarsal grooves on propleura only	4
	No tarsal grooves	5
4(3).	Broad; pronotum with pronounced median furrow, without tubercles or fovae; tarsal grooves of propleura usually deep and distinctly limited	**DIPHYAULON**
	Narrow; pronotum without pronounced median furrow; tarsal grooves of propleura short, shallow, punctate, and not distinctly limited	**ZALEPIA**
5(3).	Tarsi simple, segments 1-4 progressively shorter, pronotum without tubercles	6
	Tarsi with segments 3 and 4 dilated beneath; pronotum bituberculate near anterior margin	**DILOBITARSUS**
6(5).	Vestitute fine, not scale-like; pronotum more or less, but evenly convex dorsally; antennae serrate beginning with segment 4	**LANELATER**

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[1]Approved by the Agricultural Experiment Station, Purdue University, as Journal paper no. 3642.

[2]Responsible for the key to the genera and the reclassification.

[3]The new species description should be credited to Mignot.

[4]The generic name should be cited with Smith as the author.

[5]Authorities differ as to which countries should be included in North America. Some limit the area to Canada, United States and Mexico, while others include Central America and the West Indies as subdivision. We have decided to follow the usual practice of authors of "Floras" and divide the New World into two sections, South America, including Trinidad and other islands along the northern coast of South America, and North America to include Panamá and all of the countries north, and all of the islands of the West Indies. Greenland is included, but not Iceland.

Vestiture scale-like; pronotum irregular or not dorsally; antennae moniliform, or serrate, if serrate, beginning with segment 3. ---- 7

7(6). Pronotum evenly convex dorsally, without foveae; antennae serrate ---- **LEPIDELATER**
Pronotum irregular dorsally, with foveae; antennae serrate or moniliform. ---- 8

8(7). Pronotum bifoveate posteriorly, without median furrow; antennae serrate beginning with segment 3; vestiture scales narrow, not covering entire surface and not forming colored patterns. ---- **AULACON**
Pronotum usually bifoveate anteriorly, and sometimes posteriorly, with median furrow at least posteriorly; antennae moniliform; vestiture scales covering entire surface forming colored patterns ---- **LACON**

9(2). Grooves only on propleura, and for tarsi only, distinctly limited, deep; scutellum carinate. ---- **MERISTHUS**
Tarsal grooves, if present, very shallow and indistinctly limited; scutellum not carinate ---- **COLAULON**

10(1). Meso- and metathorax connate between mesocoxae, suture indistinct or absent (Chalcolepidiini) ---- 11
Meso- and metathoracic sutures distinct between mesocoxae. ---- 14

11(10). Prothorax without eye-spots ---- 12
Prothorax with 2 velvety eye-spots. ---- **ALAUS**

12(10). Tarsi simple. ---- 13
Tarsi lobed beneath ---- **SEMIOTUS**

13(12). Body with small iridescent scales; prosternal mucro elongate. ---- **CHALCOLEPIDUS**
Body with long whitish setae; prosternal mucro short. ---- **OISTUS**

14(10). Antennae 11-segmented. ---- 18
Antennae appearing or actually 12-segmented (Pyrophorini) ---- 15

15(14). Prothorax with luminous areas near posterior angles; antennae simple. ---- **PYROPHORUS**
Prothorax without luminous areas near posterior angles; antennae serrate or flabellate ---- 16

16(15). Antennae serrate. ---- 17
Antennae flabellate ---- **HEMIRHIPUS**

17(16). Mesosternal cavity directed vertically inward. ---- **ALAMPES**
Mesosternum with raised margin and directed hortizontally backward ---- **PYRISCHIUS**

18(14). Tarsi with segment 4 as narrow as 3 ---- 21
Tarsi with segment 4 broadened beneath (Conoderini) ---- 19

19(18). Pronotal punctation all of one size. ---- 20
Pronotal punctation of two distinct sizes. ---- **HETERODERES**

20(19). Tarsi with segment 4 distinctly lobed beneath. ---- **CONODERUS**
Tarsi with segment 4 without ventral lobe but more or less strongly cordate. ---- **AEOLUS**

21(18). Antennae with segment 2 small, approximately ½ length of 3 (Pseudomelanactini) ---- **PSEUDOMELANACTES**
Antennae with both segments 2 and 3 small, each about ½ length of 4 (Pyrophorini) ---- **CHALCOLEPIS**

GENERIC CLASSIFICATION OF NORTH AMERICAN PYROPHORINAE

The classification that follows includes several innovations: 1) the tribe Hemirhipini is placed in synonymy with Pyrophorini; 2) *Alaus* is removed once again from the Hemirhipini and placed in the Chalcolepidiini; 3) a previously unrecognized genus and species is described and recorded from the West Indies; 4) several subgenera have been given generic rank. All references not cited in the bibliography are readily available in one or more of the publications that are listed.

ELATERIDAE

PYROPHORINAE

Adelocerini

Lanelater Arnett, 1952, 3 spp., Maryland, Florida, Kansas, Texas, and Arizona (key to spp., Arnett, 1952).
Amaurus LaPorte, 1840 (not Burmeister, 1835).

Diphyaulon Arnett, 1952 [New Category], 4 spp., Eastern United States to Iowa, Texas, New Mexico, Arizona, and Pacific Northwest to western Montana (key to spp., Arnett, 1952).
Lacon subgenus *Diphaulon* Arnett, 1952.

Zalepia Arnett, 1953 [New Category], 6 spp., Northeastern United States, Eastern Canada, Arizona, and West Indies (key to spp., Arnett, 1952).
Lepidotus Stephens, 1830 (not Asso, 1801).
Lepidotus Stephens, 1830, subgenus *Lepidotus sensu stricto.*
Lepidotus Arnett, 1952, subgenus *Lepidotus sensu stricto.*

Aulacon Arnett, 1952 [New Category], 5 spp., Northeastern United States, Florida, Cuba, Arizona, Mexico, Tres Marías Island, Nicaragua, Guatemala, and Panamá (key to species Champion, 1895, and Arnett, 1952).
Lacon subgenus *Aulacon* Arnett, 1952.

Lacon LaPorte, 1836, 10 spp., Northeastern United States to Wisconsin, Wyoming, Nevada, Mexico, Guatemala, and Nicaragua (key to species, Arnett, 1952, and Champion, 1895).
Danosoma Thomson, 1859.
Lepidotus subgenus *Danosoma* Arnett, 1952.

Dilobitarsus Latreille, 1834, 3 spp., Mexico and Nicaragua (key to species, Champion, 1895).

Lepidelater Smith, 1969, 1 sp., *L. misticius* Mignot, 1969, Virgin Islands.

Lepidelater [6]Smith, NEW GENUS

The lateral margins of the elytra are deeply excavated for the reception of the tips of the femora, a feature more pronounced in this genus than most of the Adelocerini. The genus resembles *Lanelater,* but the setae are scale-like. As is noted in the key, the genus combines several of the generic features of the Adelocerini.

DESCRIPTION—Shape elongate, slightly convex, elytral apices evenly rounded; vestiture dense, large, scale-like setae.

Head: antennal segments 3-11 serrate, 2nd segment above ⅓ length of third; mandibles with bifid apices.

Thorax: pronotum slightly broader than long; surface uniformily punctate; shape more or less, but evenly, convex dorsally, without dorsal protuberances or pits; narrowed anteriorly, emarginate; anterior angles projecting; posterior angles acute. Prosternum not compressed, convex in front. Prosternal grooves for the reception of the antennae nearly as long as antennae, reaching almost to the anterior coxae. No tarsal grooves on propleura or metasternum. Scutellum slightly depressed. Tarsal segments simple, segments 1-4 progressively shorter.

[6]*Lepidos,* scaly; *elater,* drive.

Elytral punctures large, forming even striae; apex of each elytron rounded, lateral margins deeply excavated for reception of apices of femura which extend beyond edges of elytra.

Abdomen: without tarsal grooves, visible sterna subequal.

Type species: *Lepidelater misticius* Mignot, 1969 (Monobasic.)

Lepidelater misticius [7]Mignot, NEW SPECIES

(Figures 1-4)

This moderately large species resembles a *Lanelater* species in general appearance, but the scale-like setae readily distinguish it from any species of that genus.

HOLOTYPE—Male, VIRGIN ISLANDS, St. John November 15, 1966 (in insect trap) USDA Lot 67-2777. [Deposited in USNM collection].

DESCRIPTION OF HOLOTYPE—Shape elongate, slightly convex; length 19.2 mm; color uniformily fuscous; punctation coarse and dense; vestiture dense, large, whitish, recumbent, scale-like setae (fig. 1).

Head: closely and deeply punctate, punctures separated by less than their width; surface with anterior and posterior punctate excavations; length 1.7 mm, width 3.0 mm; interocular distance 1.6 mm; antennae covered with fusco-ferruginous, fine pubescence; antennal segments 3-11 serrate (fig. 2), segment 2 less than half the length of 3; mandibles bifid, directed anteriorly.

Thorax: prothoracic punctures deep, separated by about their width; medial length 5.5 mm; maximum width 5.6 mm; convex dorsally; short medial basal ridge; posterior leteral angles with single stria. Scutellum punctate, with scales.

Elytra 12.0 mm in length, 5.5 mm. wide, rounded apically; each elytron 9-striated, elytral intervals with an irregular row of fine punctures; laterally excavated as described for the genus.

Abdomen: first visible sternum at base of coxae approximately ½ length of second; apical sternum about twice length of fourth.

Male genitalia (fig. 3): trilobed, apices of parameres setose, with external tooth; penis apically acute.

ALLOTYPE—Female, same data as holotype.

Female genitalia: ovipositor with hemisterna acute apically, without styli. The internal organs are poorly preserved, but a distinctive plate in the bursa copulatrix is evident (fig. 4). This has four rows of combs, each row with the median teeth longest, decending laterally to the shortest, and with the internal rows of teeth shorter than those external.

PARATYPES—4 males and 2 females; 1 female same data as holotype, 3 males and 1 female collected from an insect trap on August 17, 1967, St. John, Virgin Islands, one male, Puerto Rico: Isla Verde, in light trap, September 20, 1968.

INDIVIDUAL VARIATION—No evident secondary sexual dimorphism; the following is the range of variation of the type series: total length, 19.1 to 22.0 mm; head length, 1.7 to 2.1 mm, width, 2.7 to 3.2 mm; interocular distance, 1.6 to 2.0 mm; pronotum length, 5.4 to 6.0 mm, width, 5.6 to 6.2 mm; elytra length, 12.0 to 14.0 mm, width 5.5 to 6.0 mm.

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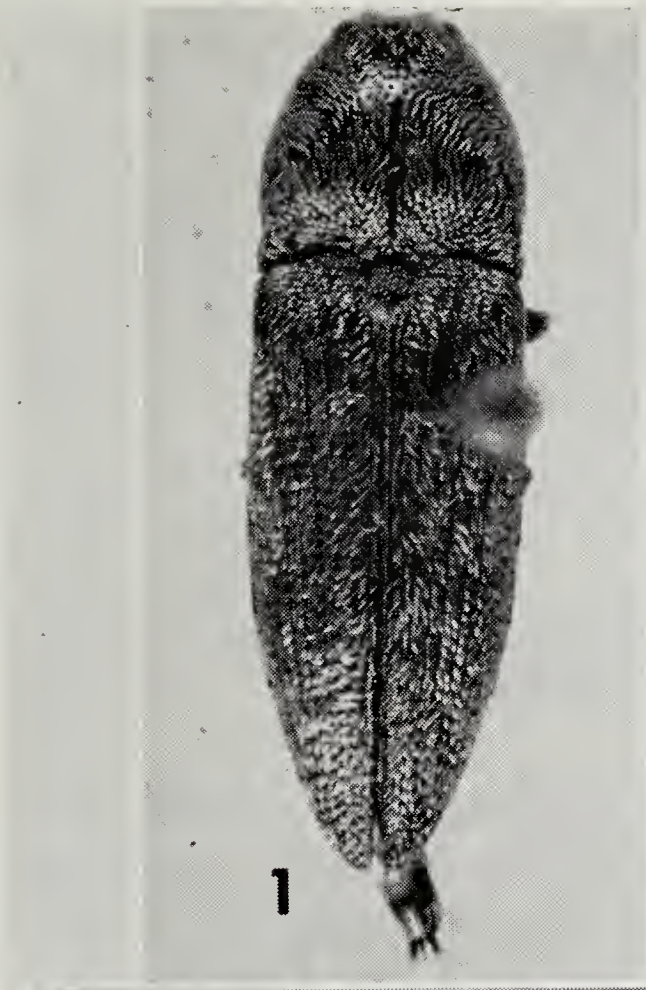
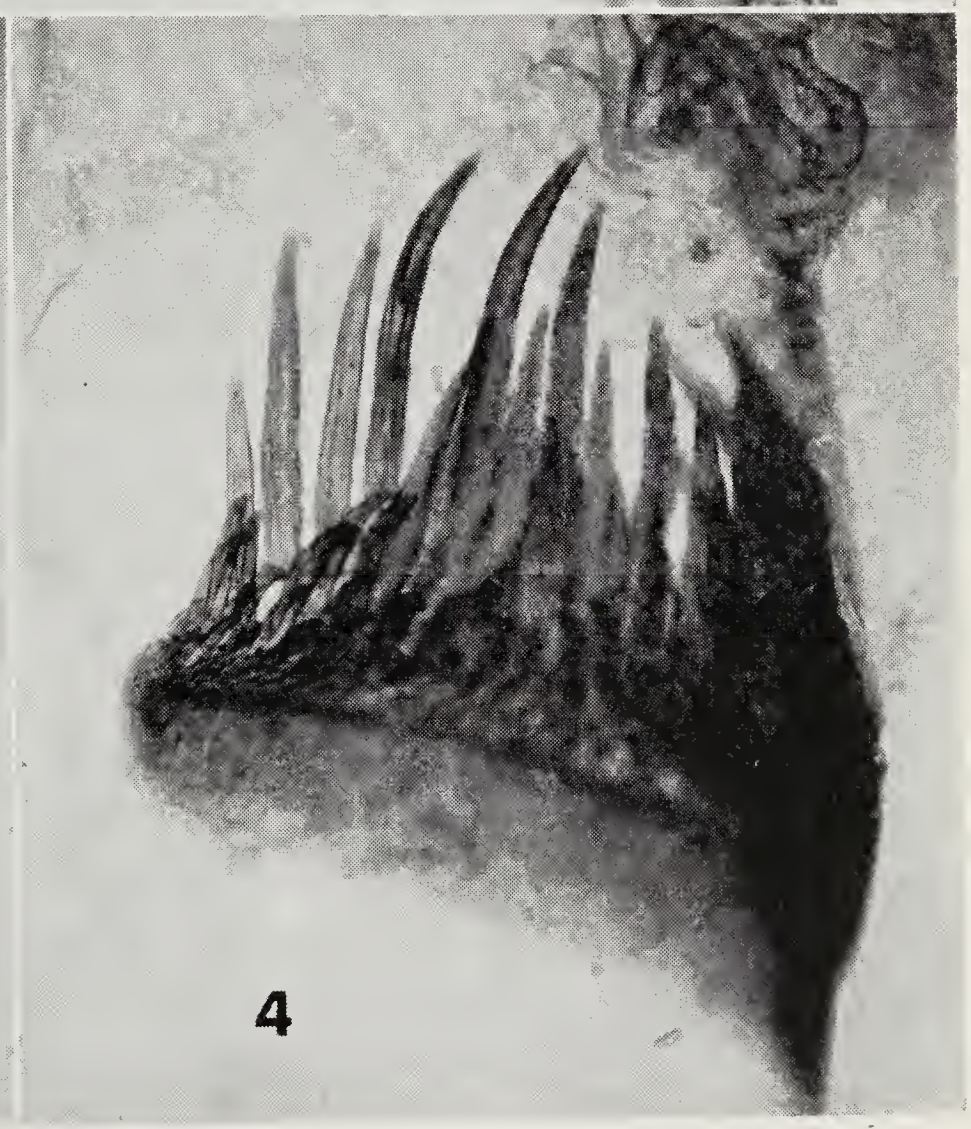
[7]*Misticus,* mongrel.





FIGURES 1-4 *Lepidelater misticius* Mignot. Fig. 1, male paratype, dorsal view; fig. 2, antenna of paratype; fig. 3, male genitalia of holotype; fig. 4, sclerotized plate of bursa copulatrix, internal view.

DISCUSSION—This species has appeared only in Puerto Rico and the Virgin Islands, with only one other species of this group of genera, *Zalepia modesta* (Boisduval), found in the West Indies, and that species is cosmotropical. It seems likely that it occurs elsewhere.

Meristhus Candèze, 1857, 3 spp., southern California, Arizona, Texas, Mexico, Guatemala, and Cuba [also one species widely distributed in the Old World.]

Colaulon Arnett, 1952, 11 spp., southern Florida, north through Alabama, through the Mississippi valley north to Nebraska and Indiana, west to Arizona, and south through Mexico and Central America.

Chalcolepidiini

Alaus Eschscholtz, 1829, 14 spp., eastern United States and Canada, west to Kansas, Oklahoma, Texas, Arizona, southern California, south through Mexico and Central America, and Cuba and Hispanola.

Calais LaPorte, 1836 (not Boisduval, 1836).

Chalcolepidius Eschscholtz, 1829, 56 spp., eastern United States south from Pennsylvania and Ohio, west to Texas, Arizona, and southern California and south throughout Mexico and Central America, one species reported from the West Indies.

Semiotus Eschscholtz, 1829, 10 spp., Mexico, and Central America.

Oistus Candèze, 1857, 5 spp., Oregon, Mexico, and Costa Rica.

Pyrophorini

Pyrophorus Illinger, 1809, 26 spp., Florida, West Indies, Texas, New Mexico, Arizona, Mexico, and Central America.

Alampes Champion, 1895, 2 spp., Nicaragua and Panama.

Pyrischius Hyslop, 1921, 1 sp., *P. haagi* (Champion), Mexico and Guatemala.

Hemirhipus Latreille, 1829, 7 spp., Mexico, Central America, and Cuba.

Pherhimius Fleutaux, 1942, isogenotypic with *Hemirhipus* Latreille.

Chalcolepis Candèze, 1857, 1 sp., *C. luczoti* Candèze, Mexico and Central America.

Pseudomelanactini

Pseudomelanactes Mathieu, 1961, 1 sp., *P. agrypnoides* (Van Dyke), Arizona.

Conoderini[8]

Conoderus Eschscholtz, 1829, 64 spp., Eastern United States, west to Texas, Arizona, and California, south through Mexico and Central America, and the West Indies.

Heteroderes Latreille, 1834, 9 spp., Florida, Alabama, Arizona, California, Mexico, and Cuba, and Puerto Rico.

Aeolus Eschscholtz, 1829, 42 spp., Eastern United States, Arizona, southern California, Mexico, Central America, and the West Indies.

[8]Several additional, undescribed genera belong here, but it will be some time before this work is completed.

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A Lathridiid Beetle Reported To Bite Man.

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In Miami, Florida three members of a family were bitten by beetles most of which were found on the bed sheets, window sills, night table, and walls in the bedroom. A smaller number were noticed on underwear, night clothes, and in the tub after bathing. Only one of the beetles was actually discovered on the skin surface. The bites resulted in pea-sized red papules some of which were capped with vesicles. The patients were not conscious of the bites, but the lesions became itchy in a few hours. Most of the bites were on covered parts of the body.

After the house was fumigated, the greatest concentration of specimens was in a Mexican sewing basket. Forty-one examples were collected by shaking it over a white sheet. Four days after fumigation a few live specimens were found. In the last eight months the family had received a number of visitors and articles from Brazil, Mexico, Japan, and the Philippine Islands.

Dr. A. B. Litterer of Miami submitted specimens to Professor Alexander Petrunkevitch of Yale, from whom the insect was received. The material agrees exactly with H. C. Fall's description of *Belonia unicostata* (Belon) a beetle of the family Lathridiidae. The correct name is now *Eufallia seminivea* Mots.

Evidently this occurrence is the first time any beetle of this family has become important medically. For a complete description consult H. C. Fall, 1899, *Trans. American Ent. Soc.*, 26:142-3, pl. 4, figs. 37, 37a, 37b. An excellent figure can be found on plate 19 of D. Sharp, *Biologia Centralia-Americana, Coleoptera,* vol. 2, part 1, 1902. Fall compared specimens from Crescent City, Florida, with the type. Since specimens have been seen from Alabama: Mobile, and Florida: Dunedin, Crescent City, and Biscayne Bay, the beetle is evidently native to Florida. But in this case it may well have been introduced from Mexico in the sewing basket. The outbreak occured in May, 1948.

The writer is indebted to Dr. Litterer for the data accompanying the specimens.